



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

FEB 15 2019

Mr. Thomas Frick
Director
Division of Environmental Assessment & Restoration
Florida Department of Environmental Protection
Mail Station 3000
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Frick:

The U.S. Environmental Protection Agency has completed its review of the document titled *Nutrient TMDLs for Lake Haines (WBID¹ 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)*. The Florida Department of Environmental Protection (FDEP) submitted the Lake Haines, Lake Rochelle, and Lake Conine Total Maximum Daily Load (TMDL) and revised Chapter 62-304, Florida Administrative Code (F.A.C.),² including the numeric nutrient criteria (NNC) for the subject waters, in a letter to the EPA dated October 9, 2018, as TMDLs and new or revised water quality standards (WQS) with the necessary supporting documentation and certification by the FDEP General Counsel, pursuant to Title 40 of the Code of Federal Regulations part 131.

The NNC were adopted under Chapter 62-304.625(17)-(19) as site-specific numeric interpretations of paragraph 62-302.530(48)(b). As referenced in paragraph 62-302.531(2)(a), the FDEP intends for the submitted NNC to serve in place of the otherwise applicable criteria for lakes set out in paragraph 62-302.531(2)(b). The total nitrogen (TN) and total phosphorus (TP) TMDLs for Lake Haines, Lake Rochelle, and Lake Conine would also constitute a site-specific numeric interpretation of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), for these water segments.

The FDEP submitted the Lake Haines, Lake Rochelle, and Lake Conine TMDLs to the EPA for review pursuant to both Clean Water Act (CWA) sections 303(c) and 303(d) since the TMDLs will also act as a Hierarchy 1 (H1) site-specific interpretation of the State's narrative nutrient criterion pursuant to 62-302.531(2)(a)1.a. The EPA acknowledges that by virtue of establishing the TMDLs in Chapter 62-304, the FDEP is also establishing an H1 interpretation of the narrative nutrient criteria for these waterbodies as new or revised WQS. The enclosed, combined WQS and TMDL decision document summarizes the EPA's review and approval of the WQS and TMDLs.

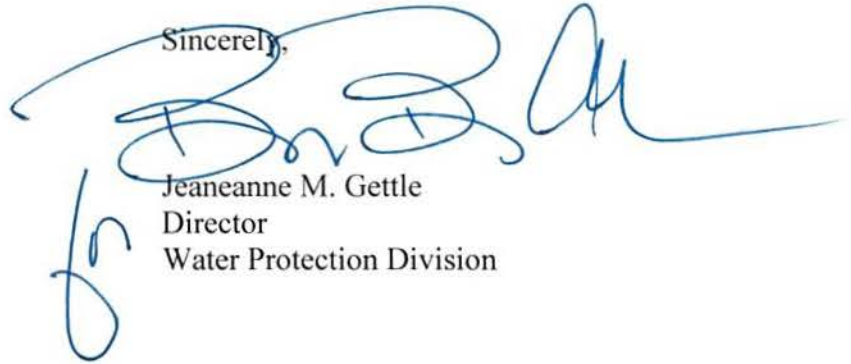
¹ WBID refers to **waterbody identification**

² Unless otherwise stated, all rule and subsection citations are to provisions in the Florida Administrative Code.

In accordance with sections 303(c) and (d) of the CWA, I am hereby approving the TMDLs promulgated in Chapter 62-304 for Lake Haines, Lake Rochelle, and Lake Conine as both TMDLs and as revised WQS for TN and TP. Any other criteria applicable to these waterbodies remain in effect, especially those related to chlorophyll *a* and in paragraph 62-302.531(2)(b). The requirements of paragraph 62-302.530(48)(a) also remain applicable. The TMDL for Lake Haines (WBID 1488C) supersedes the existing Nutrient TMDL for Winter Haven Northern Chain of Lakes, Lake Haines (WBID 1488C), which was established by the EPA in March 2006.

If you have any comments or questions relating to the approval of the H1 WQS or TMDLs, please contact me at (404) 562-9345, or have a member of your staff contact Dr. Katherine Snyder in the WQS program at (404) 562-9840 or Ms. Laila Hudda of the TMDL program at (404) 562-9007.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jeaneanne M. Gettle', is written over the word 'Sincerely,'. The signature is fluid and cursive, with a large loop at the end.

Jeaneanne M. Gettle
Director
Water Protection Division

Enclosure

cc: Mr. Kenneth Hayman, FDEP
Mr. Daryll Joyner, FDEP
Ms. Erin Rasnake, FDEP

Florida Numeric Interpretation of the Narrative Nutrient Water Quality Criterion Through Total Maximum Daily Loads (TMDLs) to Establish a Hierarchy 1 (H1): Joint Water Quality Standards (WQS) and TMDL Decision Document

H1: Nutrient TMDLs for Lake Haines (waterbody identification (WBID) 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)

ATTAINS TMDL ID: FL68604

Location: Polk County, Florida

Status: Final

Criteria Parameter(s): The Lake Haines (WBID 1488C) criteria for total nitrogen (TN) is 1.05 mg/L and total phosphorus (TP) is 0.03 mg/L, both expressed as an annual geometric mean (AGM) not to be exceeded in any year. The TMDL allocation for WBID 1488C is expressed as a percent reduction of 33% for TN.

The Lake Rochelle (WBID 1488B) criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year. The TMDL allocation for WBID 1488B is expressed as a percent reduction of 32% for TN.

The Lake Conine (WBID 1488U) criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year. The TMDL allocation for WBID 1488U is expressed as a percent reduction of 36% for TN and 57% reduction for TP.

Impairment/Pollutant: Three waterbodies (see next page) in the Peace River Basin are not meeting water quality criteria for nutrients and not supporting the designated use of Class III Freshwater (fish consumption; recreation; and propagation and maintenance of a healthy, well-balanced population of fish and wildlife). An H1 was submitted by the Florida Department of Environmental Protection (FDEP) that establishes site-specific criteria for TN and TP and provides loads to address the impairment.

Background: The FDEP submitted the final H1 for the *Nutrient TMDLs for Lake Haines (WBID 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)* (the “report”) by letter dated October 9, 2018. The draft report for Lake Haines, Lake Rochelle, and Lake Conine is dated January 2018, and was received February 7, 2018. The final report dated August 2018 includes H1 criteria concentrations and loads. A final report was received on October 17, 2018.

The submission included:

- Submittal letter
- Nutrient TMDL for Lake Haines (WBID 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion
- Documents related to Public Workshop
- Documents related to Public Hearing
- Documents related to Public Notice for Rulemaking and Rule Adoption

EPA HIERARCHY 1 REVIEW DOCUMENT

Lake Haines (WBID1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)/
Peace River Basin – Nutrients

Public Comments Received and Responses

This document explains how the submission meets the Clean Water Act (CWA) statutory requirements for the approval of WQS under section 303(c) and of TMDLs under section 303(d), and the EPA's implementing regulations in Title 40 of the Code of Federal Regulations (40 CFR) parts 131 and 130, respectively.

REVIEWERS: WQS: Katherine Snyder, WQS Coordinator, Snyder.katherine@epa.gov
TMDL: Margaret Stebbins, TMDL Coordinator, Stebbins.margaret@epa.gov

Waterbodies addressed in this H1 Approval Action:

Lake Haines	WBID 1488C	718 acres
Lake Rochelle	WBID 1488B	523 acres
Lake Conine	WBID 1488U	213 acres

EPA HIERARCHY 1 REVIEW DOCUMENT

Lake Haines (WBID 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)/
Peace River Basin – Nutrients

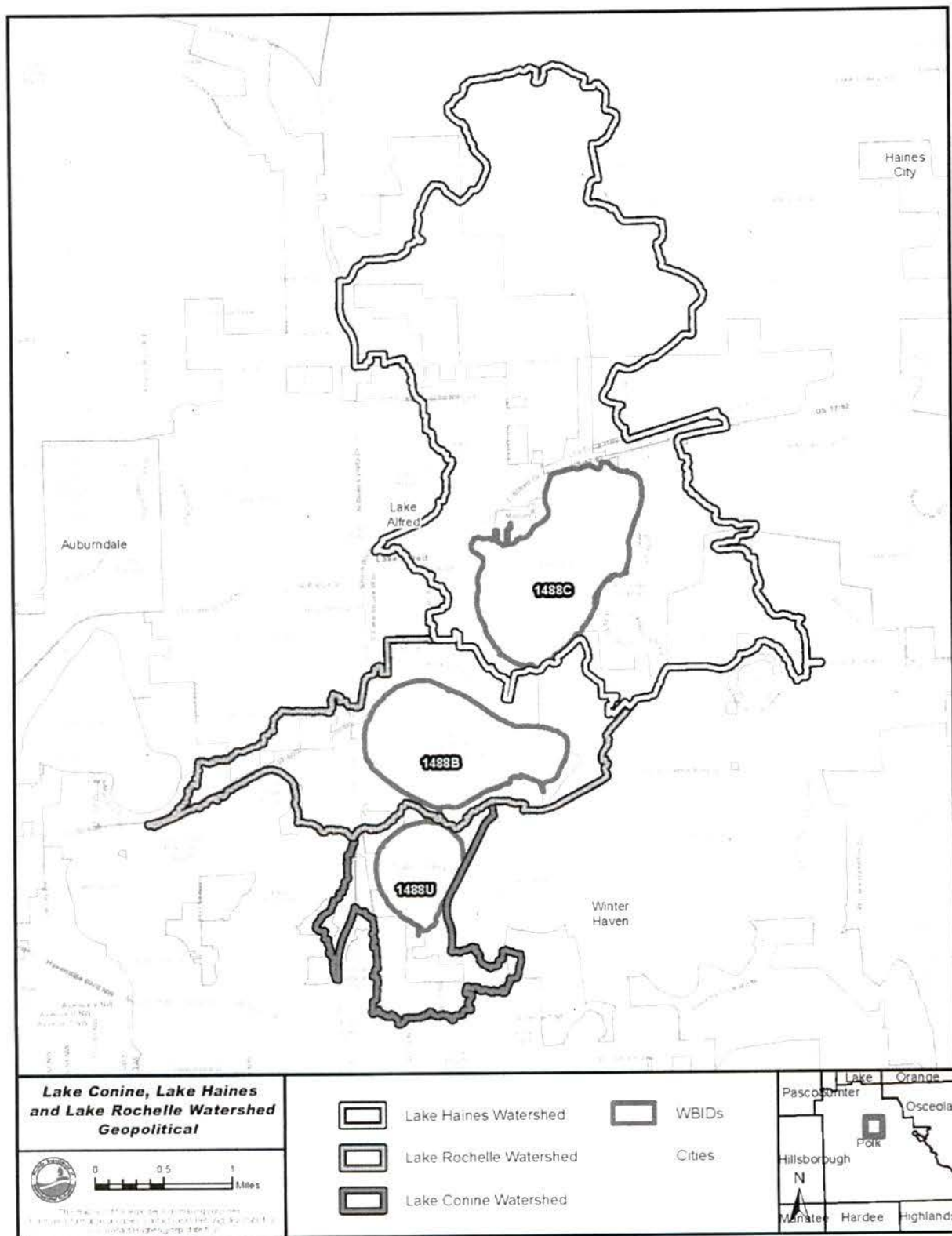


Figure 1. Watershed areas for Lake Haines (WBID 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U).

EPA HIERARCHY 1 REVIEW DOCUMENT

Lake Haines (WBID1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)/
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This document contains the EPA's review of the above-referenced H1. This review document includes WQS and TMDL review guidelines that state or summarize currently effective statutory and regulatory requirements applicable to this approval action. Review guidelines are not themselves regulations. Any differences between review guidelines and the EPA's implementing regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the EPA's statutory and regulatory requirements for approvable H1s. The sections in regular type reflect the EPA's analysis of the state's compliance with these requirements.

I. WQS Decision – Supporting Rationale

Section 303(c) of the CWA and the EPA's implementing regulations at 40 CFR section 131 describe the statutory and regulatory requirements for approvable WQS. Set out below are the requirements for WQS submissions, under the CWA and the regulations. The information identified below is necessary for the EPA to determine if a submitted WQS meets the requirements of the CWA and, therefore, may be approved by the EPA.

1. Use Designations

Section 131.10(a) provides that each state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States.

Assessment: Lake Haines, Lake Rochelle, and Lake Conine are classified as Class III Freshwater (fish consumption; recreation; and propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

2. Protection of Downstream Uses

Section 131.10(b) provides that in designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the WQS of downstream waters and shall ensure that its WQS provide for the attainment and maintenance of the WQS of downstream waters.

Rule 62-302.531(4) of the Florida Administrative Code (F.A.C.) requires that downstream uses be protected. The general direction of flow is from the northernmost lake, Lake Haines, to Lake Rochelle, and Lake Conine to the south. The outlet for Lake Conine conveys water to Lake Smart. In the Cycle 3 assessment completed in 2016, there was insufficient nutrient data available to include Lake Smart on the verified list of impaired waters. However, data did indicate that designated uses in Lake Smart may be impaired based on chlorophyll *a* (Chl_a), TN, and TP exceedances and Lake Smart was put on the State of Florida's planning list. Based on a multiple regression model with Lake Smart AGM results in the 1999-2015 period, targets were identified for TN and TP to achieve the applicable Chl_a criteria of 20 µg/L in Lake Smart. The TN target for Lake Smart would be 1.21 mg/L and TP target would be 0.03 mg/L. This method shows that the TN and TP targets selected for the three upstream lakes are lower than the targets needed to achieve the Chl_a criterion in Lake Smart and thus the site-specific criteria for Lake Haines, Lake Rochelle, and Lake Conine are protective of Lake Smart.

Assessment: The H1 is providing use protection for the downstream waters.

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Lake Haines (WBID1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)/
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3. Water Quality Criteria

Section 131.11(a) provides that states must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

During the Group 3, Cycle 3 assessment, the numeric nutrient criteria (NNC) were used to assess the lakes during the verified period (2008-2015). Lake Haines and Lake Rochelle were assessed as impaired for Chl a and TN due to exceeding the NNC more than once in a three-year period. Lake Conine was assessed as impaired for Chl a , TN, and TP because the AGMs exceeded the NNC more than once in a three-year period.

Using the sampling location in each lake with the most comprehensive dataset, the data for all three lakes was pooled. FDEP developed a multiple regression equation describing the relationships between Chl a and nutrient concentrations (TN and TP), using the AGM values for all three lakes. The results of the multiple regression analysis show a significant relationship between Chl a and nutrient concentrations. The TP water quality target for the three lakes was derived using pre-disturbance inferred water quality from paleolimnological study results measured in Lake Haines and Lake Conine (page 47 of the report). Based on the paleolimnological data, the TP value of 0.03 mg/L expressed as an AGM is identified as the TP water quality criteria for all three lakes.

The Chl a target was identified as 20 μ g/L, expressed as an AGM never to exceed. FDEP used the generally applicable 20 μ g/L Chl a criterion as a target because this level is considered protective of the designated use of low color, high alkalinity lakes, like Lake Rochelle and Lake Conine. For Lake Haines, the FDEP used the generally applicable 20 μ g/L Chl a criteria as the target because this level is considered protective of the designated use of high color lakes. See 62-302.531(2)(b), F.A.C.

Considering the 20 μ g/L Chl a criterion and the paleolimnological-based TP criterion of 0.03 mg/L, the multiple regression equation that explains the relationship of Chl a , TN, and TP, the TN criterion for all three lakes was determined to be 1.05 mg/L.

Assessment: The Lake Haines (WBID 1488C) criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year. The Lake Rochelle (WBID 1488B) criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year. The Lake Conine (WBID 1488U) criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year.

The resulting water quality will protect the designated uses for this waterbody. Any other criteria applicable to this waterbody remain in effect, including the nutrient criteria for parameters set out in 62-302.531(2)(b) F.A.C.

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4. Scientific Defensibility

Section 131.11(b) provides that, in establishing criteria, states should establish numerical values based on 304(a) guidance, 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods.

The FDEP used the generally applicable NNC to determine that Lake Haines, Lake Rochelle, and Lake Conine were impaired for nutrients during the verified period of Group 3, Cycle 3 in 2016. Lake Haines and Lake Rochelle were listed as impaired for TN and Chl_a. Lake Conine was listed as impaired for TN, TP, and Chl_a. The FDEP used the generally applicable 20 µg/L Chl_a criteria as the target because this level is considered protective of the designated use of low color, high alkalinity lakes like Lake Rochelle and Lake Conine. For Lake Haines, the FDEP used the generally applicable 20 µg/L Chl_a criteria as the target because this level is considered protective of the designated use of high color lakes. See 62-302.531(2)(b), F.A.C. Long term datasets from Lake Haines, Lake Rochelle, and Lake Conine suggest that they do not differ from the population of lakes used in the development of the NNC. The site-specific criteria for each lake were derived from paleolimnological data for TP and a multiple regression approach for TN and expressed as AGMs not to be exceeded in any year. The resulting water quality is expected to protect the designated uses for this waterbody.

Assessment: The EPA determined that the selection of a Chl_a value of 20 µg/L for Lake Haines, Lake Rochelle, and Lake Conine as the response variable target is appropriate and the technical approach to calculate the target TN and TP concentrations is scientifically sound. The approach is described in the cited report.

5. Public Participation

Section 131.20(b) provides that states shall hold a public hearing when revising WQS, in accordance with provisions of state law and the EPA's public participation regulation (40 CFR part 25). The proposed WQS revision and supporting analyses shall be made available to the public prior to the hearing.

A public workshop was conducted by the FDEP on March 6, 2018, in Bartow, Florida, to obtain comments on the draft nutrient TMDLs for Lake Haines, Lake Rochelle, and Lake Conine. The workshop notice indicated that the nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that would replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for these particular waters. The FDEP also held a public hearing on June 29, 2018, in Tallahassee, Florida.

Assessment: FDEP has met the public participation requirements for this H1.

6. Certification by the State Attorney General

Section 131.6(e) requires that the state provide a certification by the state Attorney General or other appropriate legal authority within the state that the WQS were duly adopted pursuant to state law.

A letter from the FDEP General Counsel, Robert A. Williams, dated October 9, 2018, certified that the Lake Haines, Lake Rochelle, and Lake Conine TMDLs were duly adopted as WQS pursuant to state law.

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Assessment: FDEP has met the requirement for Attorney General certification for this H1.

7. Endangered Species Section 7 Consultation

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of designated critical habitat of such species.

The existing default numeric nutrient criteria for the waterbody received concurrence by U.S. Fish and Wildlife Service (USFWS) on July 31, 2013. Because the site-specific criteria for TN and TP in Lake Rochelle and Lake Conine in this report are within the default criteria, an additional ESA section 7 consultation for this standards action is not required.

USFWS provided concurrence with the EPA's programmatic consultation on site-specific nutrient criteria for FDEP on July 21, 2015, for any site-specific nutrient criteria that are more stringent than the existing default nutrient criteria in place in the State of Florida for the waterbody. Because the site-specific criteria in this report for TN and TP in Lake Haines are more stringent than the default criteria, an additional ESA section 7 consultation for this standards action is not required.

Assessment: The EPA has met the ESA requirements for this action.

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II. TMDL Review

Section 303(d) of the CWA and the EPA's implementing regulations at 40 CFR Part 130 set out the statutory and regulatory requirements for an approvable TMDL. The following information is generally necessary for the EPA to determine if a submitted TMDL fulfills the legal requirements for approval under section 303(d) and the EPA regulations and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

1. Description of Waterbody, Pollutant of Concern, and Pollutant Sources

The TMDL analytical document must identify the waterbody as it appears on the state's 303(d) list, including the pollutant of concern. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for the EPA's review of the load and wasteload allocations, which is required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments or Chlorophyll a and phosphorus loadings for excess algae.

As mentioned in section I-3 above, Lake Haines and Lake Rochelle were assessed as impaired for Chla and TN because the AGMs exceeded the NNC more than once in a three-year period, and the waterbodies were added to the section 303(d) list for Chla and TN. They were not impaired for TP. Lake Conine was assessed as impaired for Chla, TN, and TP because AGMs exceeded the NNC more than once in a three-year period and the waterbody was added to the section 303(d) list for Chla, TN, and TP. All three lakes remain on the section 303(d) list.

In the Lake Haines and Lake Rochelle watersheds, the largest anthropogenic land use is agriculture, making up 25% and 11% of the watershed areas, respectively. Wetlands make up 38% and 29% of each watershed area, respectively. In the Lake Conine watershed, the dominant land use is medium-density residential, which comprises 33% of the watershed area, followed by water, which comprises 27% of the watershed area.

The Lake Haines, Lake Rochelle, and Lake Conine watersheds are covered by a Polk County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Phase I permit (FLS000015). The Florida Department of Transportation (FDOT) District 1 and the Cities of Winter Haven and Lake Alfred are co-permittees in the MS4 permit. Nonpoint sources addressed in the analysis primarily include loadings from surface runoff, groundwater seepage entering the lake, and precipitation directly onto the lake surface (atmospheric deposition). Further discussion of sources for the three lakes are included in chapter 4 of the report.

Assessment: The EPA concludes that FDEP has adequately identified the impaired waterbodies, the pollutant of concern, and the magnitude and location of the pollutant sources.

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2. Description of the Applicable WQS and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable state WQS, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the statewide antidegradation policy. Such information is necessary for the EPA's review of the load and wasteload allocations which is required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable WQS is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site-specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

As described in WQS review sections I-1 and I-3, Lake Haines, Lake Rochelle, and Lake Conine are Class III (fresh) waterbodies. The nutrient TMDLs presented in the report will constitute the site-specific numeric interpretation of the NNC set forth in paragraph 62-302.530(90)(b), F.A.C., that will replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for these particular waterbodies, pursuant to paragraph 62-302.531(2)(a), F.A.C. WQS review sections I-1 and I-3 describe Chla targets and site-specific criteria for these lakes.

The TN and TP concentrations identified as the site-specific criteria were in part determined by using a regression approach to achieve the applicable Chla criterion. Additionally, the selection of nutrient targets takes into consideration downstream protection and site-specific paleolimnological results for TP and is explained further in chapter 5 of the report. For all three lakes, the TN target is 1.05 mg/L and the TP target is 0.03 mg/L. The nutrient criteria are all expressed as AGM concentrations in these three lakes. The Chla concentration is expressed as an AGM concentration not to be exceeded more than once in any consecutive three-year period. The TN and TP concentrations are expressed as AGM concentrations never to be exceeded.

The detailed process for developing the water quality target is explained in Chapters 3 and 5 of the report and is also summarized in section I-3 above.

Assessment: The EPA concludes that FDEP has properly addressed its WQS when setting a numeric water quality target.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in the EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. The EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating WQS (40 CFR section 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 CFR section 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for the EPA's review of the load and wasteload allocations which is required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 CFR section 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet WQS. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency

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of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of WQS and will help in identifying the actions that may have to be undertaken to meet WQS.

The relationships between water quality and lake levels were evaluated using the AGM results from data collection. There was no apparent relationship between Chla AGM values and water levels in all three lakes. The AGM results for Chla, TN, and TP indicate that the nutrient conditions in the lakes are similar. The navigable canals connecting these lakes allows for the exchange of water between them. Additionally, the relationships of Chla and TP and Chla and TN show a significant positive response of Chla to nutrient concentrations when the results for all three lakes are combined. As nutrient conditions are similar in the lakes and the applicable Chla target criteria appropriate for these lakes is the same (20 µg/L), the water quality results for the lakes were combined to derive a nutrient target. Additionally, paleolimnological results for Lakes Haines and Conine indicate that the phosphorus levels prior to disturbance by human development were similar in this group of lakes. The paleolimnological study TP results were applied to establish a water quality target for TP. The method used to address the nutrient impairment included development of a multiple regression equation that relates lake nutrient concentrations to the AGM Chla levels, using the results from all three lakes.

A multiple regression model was developed using the nutrient results from all three lakes to derive an equation that relates TN and TP AGM concentrations to Chla AGM concentrations. The model was developed using the log-transformed corrected Chla, TN, and TP AGM concentrations calculated from Polk County lake measurements recorded from 1999 to 2015. The results of the multiple regression analyses show a significant relationship between in-lake Chla and nutrient concentrations. The results of this relationship are presented in Appendix C of the report.

As discussed in chapter 3 of the report, the NNC Chla threshold of 20 µg/L, expressed as an AGM, was selected as the response variable target for TMDL development. The paleolimnological results provided a TP concentration target. To identify a TN water quality target, the regression equation explaining the relationship of Chla to TN and TP was used to determine the TN concentration necessary to meet the Chla target of 20 µg/L. A TN geometric mean of 1.17 mg/L, associated with the TP target of 0.03 mg/L, results in a Chla AGM of 20 µg/L. To protect the downstream waters, the TN TMDL target is 1.05 mg/L. The lakes are expected to meet the applicable nutrient criteria and maintain their function and designated use as Class III freshwater when surface water nutrient concentrations are reduced to the target concentrations, addressing the anthropogenic contributions to the water quality impairment. The approaches used to establish the nutrient target also address meeting the Chla target and take into consideration the estimated pre-disturbance conditions in the lakes.

The method used for developing the nutrient TMDLs is a percent reduction approach, in which the percent reductions in the existing nutrient concentrations in Lake Haines, Lake Rochelle, and Lake Conine are calculated to meet the water quality targets. The percent reductions were calculated for each lake's parameter-specific impairments on the adopted Group 3, Cycle 3 Verified List. In Lake Haines, for the existing geometric mean TN concentration of 1.56 mg/L to achieve the target concentration of 1.05 mg/L, a 33% reduction in the lake TN concentration is necessary. In Lake Rochelle, for the existing geometric mean TN concentration of 1.54 mg/L to achieve the target concentration of 1.05 mg/L, a 32% reduction in the lake TN concentration is necessary. To achieve the TMDL targets for Lake Conine, a 36% reduction is required in the existing TN concentration of 1.65 mg/L and a 57% reduction is needed in the current TP concentration of 0.07 mg/L. The nutrient AGM TMDL values and the associated

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percent reductions address the anthropogenic nutrient inputs contributing to the exceedances of the Chla criterion.

Assessment: The EPA concludes that the loading capacity, having been calculated using the EPA-reviewed water quality models, and using observed concentration data and water quality targets consistent with numeric water quality criteria, has been appropriately set at a level necessary to attain and maintain the applicable WQS. The H1 is based on a reasonable approach for establishing the relationship between pollutant loading and water quality.

4. Load Allocation (LA)

The EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 CFR section 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 CFR section 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable WQS, and all nonpoint and background sources will be removed.

To achieve the TN target, a 33%, 32%, and 36% reduction in current TN sources to Lake Haines, Lake Rochelle, and Lake Conine, respectively, is required. To achieve the TP target, a 57% reduction in current TP sources to Lake Conine is required. The percent reductions represent the generally needed TN and TP reductions from all sources, including stormwater runoff, groundwater contributions, and septic tanks. Although the TMDLs are based on the percent reductions from all sources to the lakes, it is not the FDEP's intent to abate natural conditions. The needed reductions from anthropogenic inputs will be calculated based on more detailed source information when a restoration plan is developed. The reductions in nonpoint source nutrient loads are expected to result in reduced sediment nutrient flux, which is commonly a factor in lake eutrophication. The LA includes loadings from stormwater dischargers regulated by the FDEP and the water management district that are not part of the NPDES stormwater program.

Assessment: The EPA concludes that the LAs provided in the TMDL report are reasonable and will result in attainment of the WQS.

5. Wasteload Allocation (WLA)

The EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 CFR section 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable WQS, and all point sources will be removed.

In preparing the WLAs, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. However, it is necessary to allocate the loading capacity among individual point sources as necessary to meet the WQS.

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The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the state will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

No active NPDES-permitted facilities discharge either into the waterbody or the watersheds of each lake; therefore, a WLA for wastewater discharges is not applicable. Polk County and co-permittees (FDOT District 1 and the Cities of Winter Haven and Lake Alfred) are covered by a Phase I NPDES MS4 permit (FL000015). Areas within these jurisdictions may be responsible for a 33%, 32%, and 36% reduction in current TN loadings to Lake Haines, Lake Rochelle, and Lake Conine, respectively, and a 57% reduction in current TP loadings to Lake Conine.

It should be noted that any MS4 permittee is only responsible for the anthropogenic loads associated with stormwater outfalls that it owns or otherwise has responsible control over and is not responsible for reducing other nonpoint source loads in its jurisdiction.

Assessment: The EPA concludes that the WLAs provided in the TMDL report are reasonable and will result in the attainment of WQS. This is because the H1 accounts for all point sources discharging to impaired segments in the watershed and the WLAs require that TN and TP loads comply with the TMDL targets.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)). EPA 1991 guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

An implicit MOS was used in the development of the TMDL because of the conservative assumptions that were applied. The TMDLs were developed using the highest TN and TP AGM values to calculate the percent reductions and requiring the TMDL targets not to be exceeded in any one year. Additionally, the TN target of 1.05 mg/L, in conjunction with the TP target, results in a Chla concentration less than the criterion of 20 µg/L.

Assessment: The EPA concludes that the H1 incorporates an adequate margin of safety.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)).

The water quality results applied in the analysis spanned the 1999-2015 period, which included both wet and dry years. The estimated assimilative capacity was based on annual conditions rather than on critical/seasonal conditions for three reasons: the methodology used to determine assimilative capacity for nutrients does not lend itself very well to short-term assessments; the FDEP was generally more

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concerned with the net change in overall primary productivity in the waterbody, which is better addressed on an annual basis; and the methodology used to determine impairment was based on annual conditions.

Assessment: The EPA concludes that seasonal variations were considered and that the H1 allocations ensure protection of WQS throughout all seasons.

8. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions, and such a TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDLs are occurring and leading to attainment of WQS.

Polk County has been conducting routine monitoring of Lakes Haines, Rochelle, and Conine since 1993. Other sampling organizations like the Southwest Florida Water Management District and FDEP Southwest District have conducted monitoring intermittently for short periods. The report recommends that the current water quality and water level monitoring of each lake should continue and be expanded, as necessary, during the implementation phase to ensure that adequate information is available for tracking restoration progress. The data collected through these monitoring activities will be used to evaluate the effect of best management practices (BMPs) implemented in the watershed on lake TN and TP concentrations in subsequent water quality assessment periods.

Assessment: Although not a required element of the EPA's TMDL approval process, FDEP indicated that stakeholders would be carrying out monitoring activities in Lakes Haines, Rochelle, and Conine, which would help to gauge the progress toward attainment of WQS. The EPA is taking no action on the monitoring plan.

9. Implementation Plans

On August 8, 1997 Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with states to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist states in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in the TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by the EPA, they help establish the basis for the EPA's approval of the TMDL.

As specified in the H1, Florida implements statewide regulations to address the issue of nonpoint source pollution by requiring new development and redevelopment to treat stormwater before it is discharged. The stormwater treatment requirements are integrated with other stormwater flood control requirements of the water management districts. The State's water management districts are also required (chapter 62-40, F.A.C.) to establish stormwater Pollution Load Reduction Goals (PLRGs) and adopt them as part of a Surface Water Improvement and Management plan, other watershed plan, or rule. As outlined in subsection 403.9337(2), F.S., all county and municipal government located within a waterbody listed as

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impaired for nutrients pursuant to s. 403.067, shall, at a minimum, adopt the FDEP's *Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes*. The Model Ordinance contains numerous BMPs addressing setbacks from waterbodies, recommended fertilizer brands and slow release application rates, and proper irrigation practices. Municipal governments may adopt additional or more stringent standards if deemed necessary to better address impairment.

Assessment: Although not a required element of the TMDL approval, the FDEP discussed how information derived from the TMDL analysis process will be used to develop and implement BMPs that support implementation of the TMDL. The EPA is taking no action on the implementation portion of the submission.

10. Reasonable Assurances

EPA guidance calls for reasonable assurances when the TMDL is developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for the EPA to determine that the load and wasteload allocations will achieve WQS.

In a waterbody impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, states are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in state implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."

Polk County and other stakeholders have identified projects and provided recommendations for lake restoration priorities. A Water Quality Management Plan was developed for the Winter Haven Chain Lakes, which include Lakes Haines, Rochelle, and Conine, to ensure long-term water quality protection and compliance with water quality regulations.¹ The County also contracted with an independent contractor to review TMDLs for 23 lakes which included Lakes Haines, Rochelle, and Conine, and a report was prepared which included targets and recommendations.² Implementation of the recommendations in the plan will assure water quality restoration of the lakes.

The TMDL analysis method indicated that the Chl_a concentration target for the lakes will be attained at the TMDL in-lake TN and TP concentration, frequency and duration, while taking into consideration the estimated pre-disturbance phosphorus conditions in the lakes. The FDEP notes that there were no impairments for nutrient-related parameters (such as dissolved oxygen [DO] or un-ionized ammonia). The proposed reductions in nutrient inputs will result in further improvements in water quality.

Assessment: The EPA considered the reasonable assurances contained in the report. Point sources are required to comply with their NPDES permits, which must include the requirements and assumptions of the H1. Reductions for nonpoint sources are expected to occur as a result of the incentive and voluntary

¹ PBS&J. 2010. Winter Haven Chain of Lakes Water Quality Management Plan. Prepared for the City of Winter Haven, Tampa, FL.

² Atkins. 2014. Prioritizing Future Actions Related to Impaired Lakes and the FDEP TMDL Program. Prepared for Polk County, Bartow, FL.

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programs that were already in place or will be developed as part of the Water Quality Management Plan with active participation of its stakeholders.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each state must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 CFR section 130.7(c)(1)(ii)). In guidance, the EPA has explained that the final TMDL submitted to the EPA for review and approval must describe the state's public participation process, including a summary of significant comments and the state's responses to those comments. When the EPA establishes a TMDL, EPA regulations require the EPA to publish a notice seeking public comment (40 CFR section 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where the EPA determines that a state has not provided adequate public participation, the EPA may defer its approval action until adequate public participation has been provided for, either by the state or by the EPA.

The FDEP published a Notice of Development of Rulemaking on February 21, 2018, to initiate TMDL development for impaired waters in the Peace River Basin. A Technical Public Meeting to present the general TMDL approach for Lakes Haines, Rochelle, and Conine was held on November 8, 2017.

A rule development public workshop was conducted by the FDEP on March 6, 2018, in Bartow, Florida, to obtain comments on the draft nutrient TMDLs for Lake Haines, Lake Rochelle, and Lake Conine. The workshop notice indicated that the nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that would replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for these waters. A 30-day public comment period was provided to the stakeholders. Public comments were received for the TMDLs and the FDEP reported that all comments were addressed through in-person or phone meetings with commenters. The FDEP also held a public hearing on June 29, 2018, in Tallahassee, Florida.

Assessment: The EPA concludes that the State involved the public during the development of the H1, provided adequate opportunities for the public to comment on the report, and provided reasonable responses to the comments received.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to the EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under section 303(d) of the CWA for EPA review and approval. This clearly establishes the state's intent to submit, and the EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody and the pollutant(s) of concern.

Assessment: Accompanying the State's (October 2018) final TMDLs for nutrients was a submittal letter dated October 9, 2018, from Robert A. Williams General Counsel, the FDEP, requesting the review and approval of the nutrient TMDLs for: Lake Tallavana, Lake Hollingsworth, Lake Haines, Lake Rochelle, Lake Conine, Lake Alfred, Lake Blue, Lake Marianna, Lake Ariana, and Eagle Lake.

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III. Conclusion

The EPA Region 4 Water Protection Division Director is **APPROVING** the H1 NNC and TMDLs addressed by this decision document in accordance with sections 303(c) and 303(d) of the CWA, as consistent with the CWA and 40 CFR parts 131 and 130, respectively.

The H1 NNC presented in this decision document will constitute the site-specific numeric interpretation of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that will replace the otherwise applicable numeric criteria for TN and TP in subsection 62-302.531(2) for these particular waters, pursuant to paragraph 62-302.531(2)(a)1.b., F.A.C. Based on the chemical, physical, and biological data presented in the development of the H1 NNC outlined above, the EPA concludes that the revised NNC for TN and TP provide for and protect healthy, well-balanced, biological communities in the waters to which the NNC apply and are consistent with the CWA and its implementing regulations at 40 CFR 131.11.

Therefore, the Lake Haines (WBID 1488C) site-specific criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year. The TMDL allocation for WBID 1488C is expressed as a percent reduction of 33% for TN.

The Lake Rochelle (WBID 1488B) site-specific criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year. The TMDL allocation for WBID 1488B is expressed as a percent reduction of 32% for TN.

The Lake Conine (WBID 1488U) criteria for TN is 1.05 mg/L and TP is 0.03 mg/L, both expressed as an AGM not to be exceeded in any year. The TMDL allocation for WBID 1488U is expressed as a percent reduction of 36% for TN and 57% for TP.

The requirements of paragraph 62-302.530(48)(a), F.A.C. also remain applicable.

Furthermore, after a full and complete review, the EPA finds that the H1 for Lake Haines (WBID 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U)/ Peace River Basin for TN and TP satisfies all the elements of approvable TMDLs. This approval is for the *Final Report Nutrient TMDLs for Lake Haines (WBID 1488C), Lake Rochelle (WBID 1488B), and Lake Conine (WBID 1488U) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion*, addressing three waterbodies for use impairments due to nutrients based on elevated TN and/or TP.